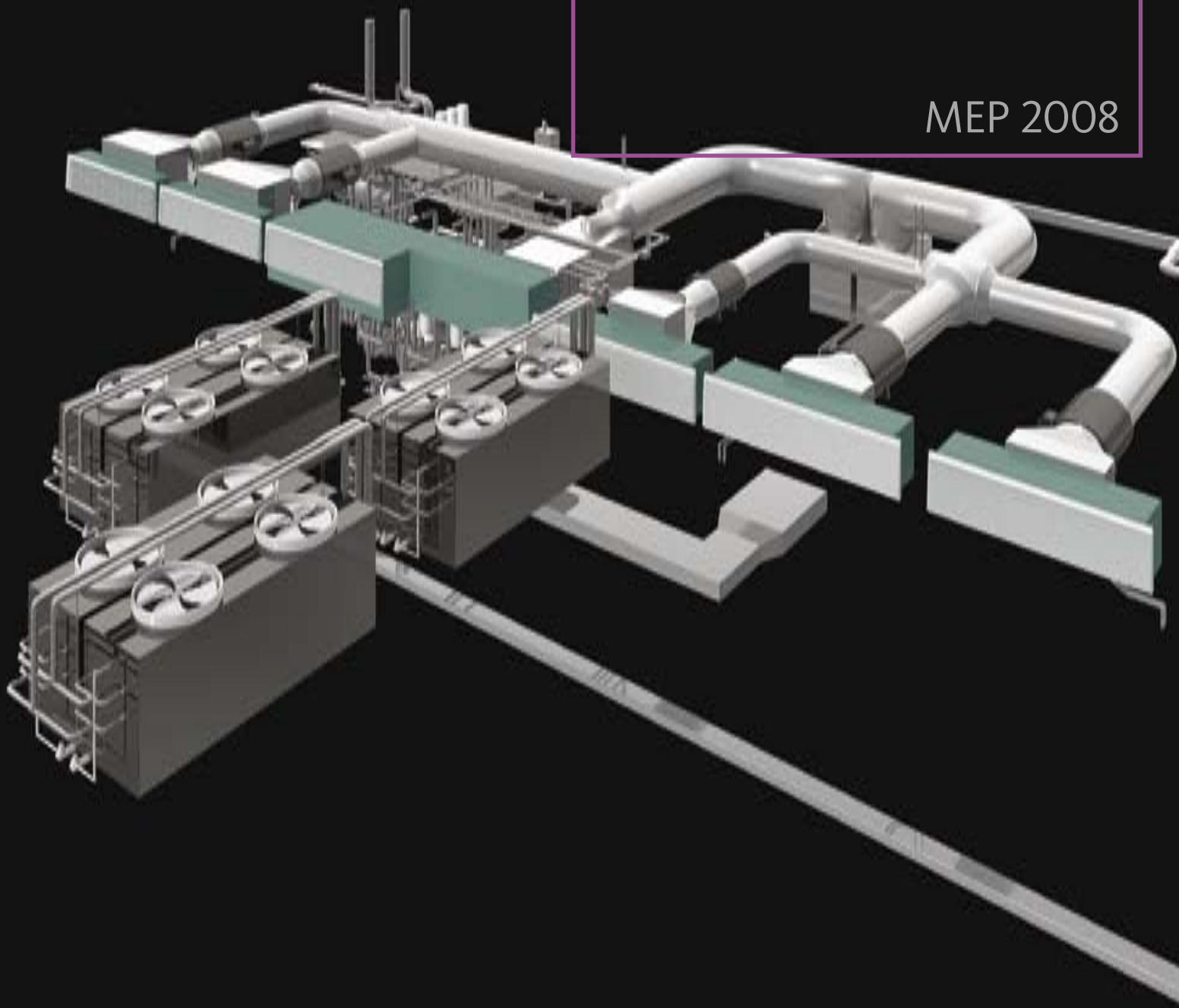
Building Information Modelling for MEP Engineering

Revit®

MEP 2008



Autodesk®

Design Intuitively with Tools That Work the Way Engineers Think

Revit® MEP software is an intuitive design tool that works the way engineers think for better coordination and faster design. Optimise systems engineering through data-driven system sizing and design. Gain better decision-making and building performance analysis support for engineers, facilitating sustainable design. Minimise co-ordination errors between mechanical/electrical/plumbing (MEP) engineering design teams, as well as with architects and structural engineers within Revit-based workflows. Accelerate decision making through the automated creation of engineering design data and enhanced client communications. Collaborate smoothly by using a building model developed in Revit® Architecture or Revit® Structure software. Finally, make a change anywhere and Revit MEP co-ordinates that change everywhere in your design and documentation set. Revit MEP, the building information modelling software for MEP engineering.

Enjoy an intuitive, straightforward design process with software that mirrors the real world of engineering. Revit MEP works holistically, treating information in terms of the entire building, linking mechanical, electrical and plumbing systems with the building model. Reap the competitive advantage of building information modelling by designing optimal MEP engineering systems for buildings and gain better building performance analysis support for engineers. Get design feedback instantly from the building information model when working within a Revit-based architectural or engineering workflow. Get timely feedback on a project's MEP scope, schedule and budget.

Mechanical HVAC Space Design Criteria

Create room colour-fill plans by using design parameters to communicate design intent visually, rather than deciphering spreadsheets and schedules. Use colour-fill plans to quickly facilitate design reviews and present your design criteria to clients for review and validation. Colour fills are directly linked to the model so the plans update automatically as design changes are made. Create any number of schemes and easily maintain them for the life of the project.

Mechanical Duct and Pipe System Modelling

Mechanical functionality offers 3D modelling for ductwork and piping to create HVAC systems. Intuitive layout tools make 3D modelling fast and easy for even the first-time user to master. Easily modify the model by dragging design elements to move or change them on the screen, in almost any view. All model views and sheets update automatically whenever a change is made anywhere for accurate and co-ordinated designs and documents at all times.

Mechanical Duct and Pipe Sizing/ Pressure Calculations

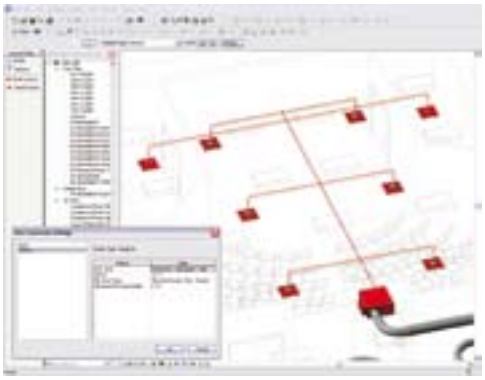
Built-in calculators are available for sizing mains, branches and even whole systems at a time. Sizing and pressure loss calculations are done according to industry-standard methods and specifications built into Revit MEP, such as the ASHRAE fitting loss database. System sizing tools are integrated with the layout tools and instantly update the size and design parameters of duct and pipe elements without file exchanges or third-party applications.

Mechanical System Inspector (Critical Path)

Revit MEP displays the critical flow path for branches, main trunks or entire systems. Quickly and easily identify areas of the system with the highest pressure loss so that you can modify the design for maximum economy and efficiency. Interactively change fittings, shape or configuration and instantly see the updated static pressure loss and changes to flow properties.

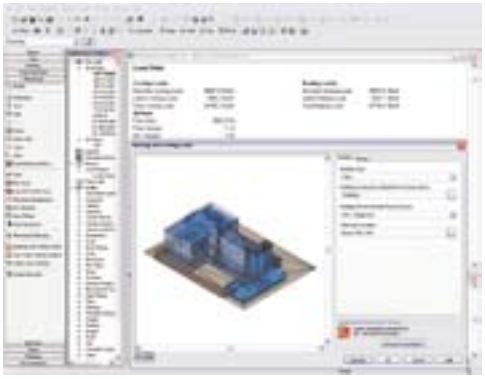
Mechanical Auto-Route Duct

Automatically route complex duct runs between any two points with only two clicks. Constrain the routing path by selecting fitting or connection preferences to meet your design criteria. Choose from among multiple path options to determine the path that works best for your design.



NEW Building Performance Analysis

Take full advantage of building information modelling to provide better decision-making support through the use of building performance analysis tools. Provide significant benefits to the sustainable design process, supporting the goal of a better-performing building. Perform heating and cooling load, LEED daylighting, thermal energy and other analyses using Revit MEP and the IES Virtual Environment.

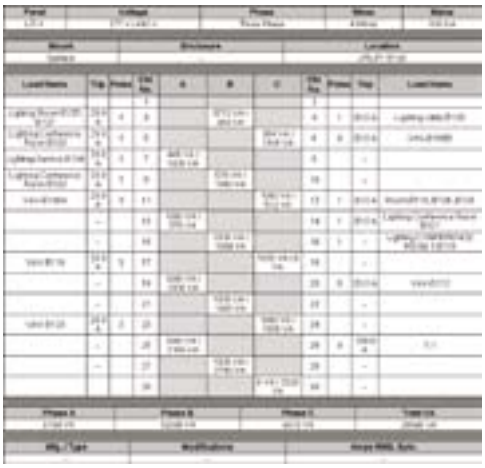


Electrical Lighting and Power Circuitry

Minimise errors in your electrical design by using circuits to track loads, number of attached devices and circuit lengths. Define wire types, voltage ranges, distribution systems and demand factors to help ensure the compatibility of electrical connections in your design and prevent overloads and mismatched voltages. Calculate the estimated demand loads on feeders and panels to size equipment quickly and efficiently directly in your design. Take advantage of circuit analysis tools to quickly total loads and generate reports for accurate documentation.

Electrical Panel Schedules

Automatically create panel schedules as you lay out your design. Balance the loads or change circuits for a device directly through the panel schedule. Easily edit the panel circuits through a built-in panel circuit editor.



Electrical Lighting Calculations

Revit MEP uses the zonal cavity method to automatically estimate lighting levels in rooms based on the lights placed in the space. Set the reflectivity values of the room surfaces, attach industry-standard IES data files to lighting and define the calculation workplane height. Revit MEP then automatically calculates the estimated average illumination value for the room.

Electrical Auto-Wire Circuits

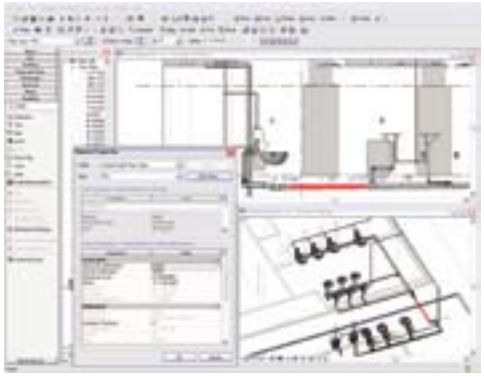
Revit MEP automatically wires lighting fixtures and receptacles to include the home run to the panel assigned to those electrical devices. Automated wire path layout tools provide path options, enabling you to choose which routing preference you want to use for annotation.

Plumbing System Modelling

Gain full 3D parametric modelling of plumbing system layout with Revit MEP. The software automatically places all risers and drops as you design your plumbing system. Intuitive layout tools make 3D modelling fast and easy. Modify your design by simply dragging design elements to move or change them on the screen, in almost any view. All model views and sheets update automatically whenever a change is made in any view for accurate and co-ordinated designs and documents at all times.

Sloped Pipe and Invert Elevations

Model sloped piping for all plumbing systems according to industry code. Simply define the rise over run and lay out your plumbing design, while Revit MEP does all the calculations for you. Automatically calculate invert elevations and tag them at the ends of pipe runs, minimising the guesswork and manual calculation on sloped pipe.



Electrical Voltage Drops and Derating Factors

Identify voltage drops and apply derating factors as you design. This capability enables you to enhance your design data with engineering information crucial in evaluating the best electrical system for your design.

Increase Co-ordination Through Parametric Change Management

Maximise the efficiency of your Revit-based architectural/engineering design development and construction documentation process with Revit MEP. Minimise design co-ordination errors between mechanical, electrical and plumbing engineering design teams, as well as with architects and structural engineers. Enhance client communications and accelerate decision making through in-process visualisation. Collaborate smoothly by using a building model developed in Revit Architecture or Revit Structure software.

Built on Revit Platform

Since Revit MEP is built on the latest version of the Revit platform, you get all the benefits of the new features available, as well as the competitive advantages of building information modelling.

Parametric Components

Parametric components are the basis for all building components designed in Revit MEP. They offer an open, graphical system for design thinking as well as an opportunity to express design intent at increasingly detailed levels. Use parametric components for even the most elaborate assemblies for mechanical, electrical and plumbing engineering systems. Best of all, no programming language or coding is required.

Bidirectional Associativity

A change anywhere is a change everywhere. All Revit MEP model information is stored in one place. As a result, any information that gets changed is effectively changed throughout the entire model. Parametric technology automatically manages all change propagation.

Automatic Sheet Drawing References

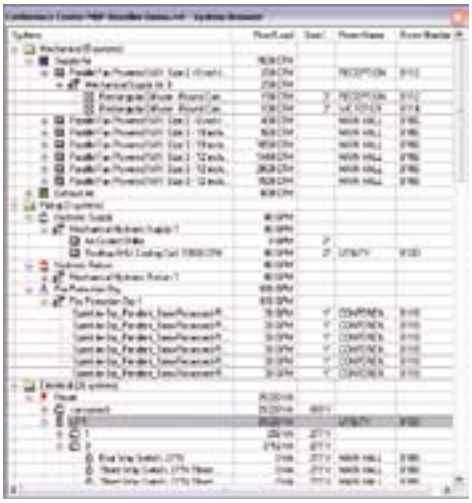
This functionality means that no section, elevation or callout references the wrong drawing or sheet, and all data and graphics, details, schedules, drawings and sheets in the drawing set are current and co-ordinated.

Interference Checking

Use this tool during the design process to co-ordinate major building elements and systems, helping to prevent collisions between elements and reducing the risk of construction cost overruns.

System Browser

The systemwide browser enables you to easily perform model continuity checks on defined system types, quickly see unbalanced loads and identify orphaned elements that are not connected to any system. This tool provides assurance that all MEP system elements in the model are properly connected and contribute to system load requirements for accurate sizing. The project wide system browser reduces the time needed to manage and navigate the various MEP systems in your project.

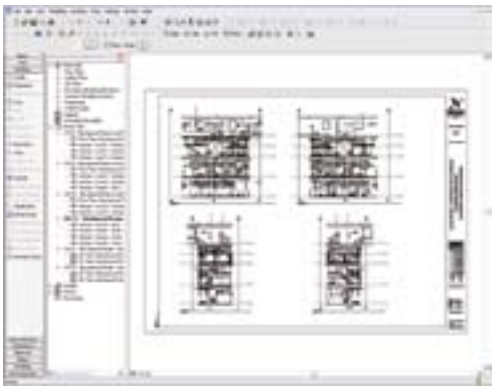


Scheduling

Most design parameters for MEP systems are available for scheduling. Create multiple types of customised schedules (for example, lighting schedules and mechanical and electrical equipment schedules) that are linked to your Revit Systems model.

Construction Documentation

Automatically generate plan, section, elevation, detail and schedule views that accurately capture the design information in your design model. All views of the model are synchronised at all times from a common database where changes made to any one view propagate to all views simultaneously. Co-ordination is managed by change propagation within the model.



Revit Architecture Support

Since Revit MEP is built on the Revit platform, co-ordination among MEP team members and with architects using Revit Architecture has never been easier. Revit Architecture models are the best way to support engineering design criteria. The architectural spaces are shared and used by Revit MEP to support load calculations, track airflow in rooms and co-ordinate panel schedules.

Revit Structure Support

With Revit MEP, design teams can help ensure complete design and documentation co-ordination with structural engineers using Revit Structure. A building information model makes it possible to uncover potential conflicts between the MEP and structural designs early in the design process, resulting in cost savings.

HVAC Energy and Load Analysis (gbXML)

Revit MEP enables you to export to gbXML (green building extensible mark-up language) for energy and load analysis. When the analysis is complete, simply re-import the data and store the results in the model. Export this information to a spreadsheet for easy sharing with team members who don't use Revit MEP software.

Improve Your Business with Enhanced Communication

Create a realistic representation of a building's MEP engineering systems for enhanced communication of design intent to client. Benefit from the automated exchange of engineering design data from the building information model. Find errors sooner, before they show up in the field, avoiding costly redesign on site.

Worksharing

Revit MEP Worksharing distributes the power of the parametric modelling environment across the project team. Worksharing provides a complete range of collaboration modes from entirely on-the-fly, simultaneous access to the shared model, through the formal division of the project into discrete shared units, to complete separation of project elements or systems into individually managed linked models. Worksharing enables the team to choose the best way to collaborate and interact based on their workflow and project requirements.

Publish to Autodesk Buzzsaw

Publish to Autodesk® Buzzsaw® functionality enables you to easily upload your file from Revit MEP to your Buzzsaw project site. Added functionality allows for automatic conversion of your Revit MEP files to either DWG or DWF format. With the addition of default template assignments you can assign properties to a view and set those properties back to their original state before publishing or printing your project.

Interface to External Databases

Facilitate communications with third-party estimating, planning, procurement and facility management tools by outputting Revit MEP model data to any ODBC-compliant database.

Autodesk VIZ and Autodesk 3ds Max Interoperability

Use Autodesk® VIZ or Autodesk® 3ds Max®software to import 3D DWG files produced in Revit MEP and create photorealistic renderings of your MEP engineering designs.

Import/Export ACIS Solids with AutoCAD-Based Applications

Revit-based products can read and write ACIS® solids. This capability gives users a way to import and export Revit MEP models with any AutoCAD-based architectural or engineering software application. Import or link 3D solid geometry into AutoCAD® Architecture or AutoCAD® MEP software. For example, use this method to cut sections and perform visual interference detection.

Application Programming Interface (API)

The Revit API provides a rich programming environment and continues to be developed to facilitate and extend Revit functionality throughout the building industry.

DWG/DWF/DXF/DGN Support

Revit MEP imports, exports and links your data with the industry's best DWG compatibility. Native support for DWG™, DWF™, DXF™ and DGN formats helps assure fully compatible data exchange.

The parametric BIM technology... superb co-ordination and visualisation, ease of use, cost-effectiveness and ability to rapidly change designs to meet ever-growing client demands are key indicators for this as the design methodology of choice over conventional methods.

– Tim DeRuyscher, PE
Executive Vice President
RobsonWoese, Inc.

At SEi we have a history of being able to design very complex and challenging MEP engineering projects. With the arrival of Revit MEP, purpose-built for MEP engineering, we see significant improvements in our ability to support such projects in a more synchronised environment, with the architect, throughout the design process.

– Robert Gracilieri
CEO
SEi Companies

AutoCAD Revit MEP Suite
Revit MEP software is available as part of AutoCAD® Revit® MEP Suite, which also includes Autodesk's leading AutoCAD-based software application for MEP engineering, AutoCAD MEP. For more information about Revit MEP or AutoCAD Revit MEP Suite, visit **www.autodesk.nl/revitmepsuite.**

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To learn more about Autodesk solutions for mechanical, electrical and plumbing engineering, visit **www.autodesk.nl/bouwkunde.**

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